Strength & Conditioning Professional Standards and Guidelines

Approved July 8, 2009

Update Task Force

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Strength and Conditioning Professional Standards and Guidelines: Overview

The Strength & Conditioning profession has come to a defining moment. The profession involves the combined competencies of sport/exercise science, administration, management, teaching and coaching. Its practitioners must also comply with various laws and regulations while responding to instances of potential injury, and related claims and suits. This creates remarkable challenges, and requires substantial experience, expertise and other resources to effectively address them, especially in multi-sport (e.g., collegiate and scholastic) settings.

Ample resources are available in some of these settings. In many others, however, they are not. Budgets, equipment, facilities and staff are often limited (or lacking altogether), with a resulting mismatch between the participants' demand for safe and effective programs and services, and the institution's provision of them. It is important for Strength & Conditioning practitioners and their employers to understand that this standard of care is a shared duty; the institution and individual are thus jointly responsible for fulfilling it. Collectively, these issues are the driving forces behind this project.

The purpose of the NSCA Strength & Conditioning Professional Standards & Guidelines project is to help identify areas of risk exposure, increase safety and decrease the likelihood of injuries that might lead to claims, and ultimately improve the standard of care being offered. This document is intended to be neither rigid nor static. On the contrary, the need for discretion and insight is a fundamental theme throughout; and the information presented here will be revised periodically as the profession continues to evolve. It is hoped that Strength & Conditioning practitioners and the institutions employing them will mutually benefit from applying this information, and in turn significantly enhance the quality of services and programs provided to their participants.

Notice

This document is intended to provide relevant practice parameters for Strength & Conditioning professionals to utilize when carrying out their responsibilities in providing services to athletes or other participants. The standards and guidelines presented here are based on published scientific studies, pertinent statements from other associations, analysis of claims, and a consensus of expert views. However, this information is not a substitute for individualized judgment or independent professional advice.

Neither the NSCA nor the contributors to this project assume any duty owed to third parties by those reading, interpreting or implementing this information. When rendering services to third parties, these standards and guidelines cannot be adopted for use with all participants without exercising independent judgment and decision-making based on the Strength & Conditioning professional's individual training, education and experience. Furthermore, Strength & Conditioning practitioners must stay abreast of new developments in the profession so that these standards and guidelines may evolve to meet particular service needs.

Neither the NSCA nor the contributors to this project, by reason of authorship or publication of this document, shall be deemed to be engaged in practice of any branch of professional discipline (e.g., medicine, physical therapy, law). Strength & Conditioning practitioners utilizing this information are encouraged to seek and obtain such advice, if needed or desired, from licensed professionals.

Introduction

Scope of Practice

The responsibilities and professional scope of practice for Strength & Conditioning professionals can be subdivided into two domains (58): "Scientific Foundations" and "Practical/Applied". Each of these involves corresponding activities, responsibilities and knowledge requirements (refer to Appendices A & B):

Scientific Foundations

- Exercise Sciences (Anatomy, Exercise Physiology, Biomechanics,etc)
- Nutrition

Practical/Applied

- Program Design
- Exercise Technique
- Organization & Administration
- Testing & Evaluation

Duties & Concepts

Strength & Conditioning practitioners have duties to provide an appropriate level of supervision and instruction in order to meet a reasonable standard of care, and to provide and maintain a safe environment for the participants under their supervision. These duties also involve informing users of risks inherent in and related to their activities, and preventing unreasonable risk or harm resulting from "negligent instruction or supervision"(28, 29, 36). Greenwood & Greenwood (Chapter 21 [pp. 543 – 568] of Essentials Of Strength Training & Conditioning 7) summarize the following key liability concepts for the Strength & Conditioning professional:

- Assumption of risk: voluntarily participation in activity with knowledge of the inherent risk(s). Athletic activities, including Strength & Conditioning, involve certain risks. Participants must be informed of the risks of activity, and required to sign a statement to that effect.
- Responsibility, duty or obligation; Strength & Conditioning professionals have a duty to the participants they serve to take reasonable steps to prevent injury, and to act prudently when an injury occurs. (12)

- Standard of care: what a prudent and reasonable person would do under similar circumstances. A Strength & Conditioning professional is expected to act according to his/her education, training and certification status (e.g., CSCS, NSCA-CPT, CPR, and First Aid).

- Negligence: failure to act as a reasonable and prudent person would under similar circumstances. Four elements must exist for a Strength & Conditioning professional to be found liable for negligence: duty, breach of duty, proximate cause, and damages (65). Simply stated, a Strength & Conditioning professional is negligent if he/she is proven to have a duty to act, and to have failed to act with the appropriate standard of care, proximately causing injury or damages to another person.

Standards vs. Guidelines

It is important to distinguish between "standards" and "guidelines" because each term has different legal implications (9,83):

- Standard: a required procedure that probably reflects a duty or obligation for standard of care (note that the standard statements in this document utilize the word "must"). The standards set forth in this document may ultimately be recognized as a legal standard of care to be implemented into the daily operations of Strength & Conditioning programs and facilities.

- Guideline: a recommended operating procedure formulated and developed to further enhance the quality of services provided (note that the guideline statements in this document utilize the word "should"). Guidelines are not intended to be standards of practice or to give rise to legally defined duties of care, but in certain circumstances they could assist in evaluating and improving services rendered.

While the publication of this document does not amount to a determination of the standard of care to be applied in a particular case, it is presumed, that the standards stated herein may be given authoritative weight.

Published Standards of Practice = Potential Duties

Proof of duty or standard of care case can be determined in various ways, one of which is from standards of practice published by professional associations and organizations. Published standards of practice can be used particularly to help determine whether a person was negligent in carrying out his/her duties (19), where they are generally recognized as being indicative of widely accepted practices. Some courts examining these issues in negligence cases have ruled that violations of such professional standards constitute a breach of duty.

If properly adopted and applied, published standards of practice can minimize liability exposures associated with negligence, and thereby serve as a shield for those who comply with them. They can also be used as a sword against those who do not comply with them, potentially increasing liability risks associated with negligence (19). The key issue in this regard appears to be the practitioner's consistent application of established standards of practice in the provision of daily service. For example, if his/her conduct is proven to be consistent with accepted standard(s), it will be difficult to show breach of duty, thereby providing greater protection against negligence. If his/her conduct is not proven to be consistent with accepted standard(s), however, it may be easier for the injured party to show breach of duty by failure to follow such standards, which can lead to a ruling of negligence.

Types of Standards

In addition to standards for desired operational practices published by professional organizations such as the NSCA, there are also standards for technical/physical specifications published by independent organizations such as the AMERICAN SOCIETY FOR TESTING & MATERIALS (ASTM) or U.S. CONSUMER PRODUCT SAFETY COMMISSION (CPSC). These are briefly described below:

Operational Practices

Established standards of care can be used to gauge a practitioner's professional competence by comparing his/her actual conduct with written benchmarks of expected behavior. In addition to the standards and guidelines from allied professional organizations such as the AMERICAN COLLEGE OF SPORTS MEDICINE (8,23,83), AMERICAN HEART ASSOCIATION (8,52) and NATIONAL ATHLETIC TRAINERS' ASSOCIATION (73) referenced in this document, the following associations have also published standards of practice:

- AEROBICS & FITNESS ASSOCIATION OF AMERICA. Exercise Standards & Guidelines. Ventura CA: AFAA, 1995.

- AMERICAN ACADEMY OF PEDIATRICS. Strength Training by Children and Adolescents. Pediatrics 2008 121: 835 – 840. http://aappolicy.aappublications.org/cgi/search

- AMERICAN PHYSICAL THERAPY ASSOCIATION. Guide to Physical Therapist Practice (2nd Edition). Alexandria VA: APTA, 2001.

- AMERICAN PHYSICAL THERAPY ASSOCIATION. Administration of physical therapy services. Alexandria VA: APTA, 2001. http://www.apta.org/AM/Template.cfm?Section=Policies_and_Bylaws&CONTENTID=33912&TEMPLATE=/CM/ContentDisplay.cfm

- NATIONAL ASSOCIATION FOR SPORT & PHYSICAL EDUCATION. National Physical Education Standards (3rd Edition). Columbus OH: McGraw-Hill Higher Education, 1995.

- NATIONAL ASSOCIATION FOR SPORT & PHYSICAL EDUCATION. National Standards for Athletic Coaches. Reston VA: NASPE, 1995.

- NATIONAL ATHLETIC TRAINERS' ASSOCIATION BOARD OF CERTIFICATION. Standards of Professional Practice. Dallas TX: NATA, 2000. http://www.

bocatc.org/index.php?option=com_content&task=view&id=51&Itemid=54

- PRESIDENT'S COUNCIL ON PHYSICAL FITNESS AND SPORTS. Youth Resistance Training. Research Digest 4(3): 1 – 8, 2003. http://www.fitness.gov/Reading_Room/Digests/Digest-September2003.pdf

Technical/Physical Specifications

Technical/physical specifications relevant to the Strength & Conditioning profession have been published by the CPSC (e.g., "Prevent Injuries to Children From Exercise Equipment"; CPSC Document #5028) and ASTM (3,4). The former organization also operates the National Electronic Injury Surveillance System (NEISS), a surveillance and follow-back system that gathers data from hospital emergency departments to provide timely information on consumer injuries associated with certain products or activities. Some of this data has been used to research weight training injuries, as will be addressed in the Injury Trends, Litigations & Standard of Care Load discussion.

Standards of Practice As They Apply to Risk Management

Risk management is a proactive administrative process that helps minimize liability, as well as decrease the frequency and severity of injuries and subsequent claims (18). It may not be possible to eliminate all risk of injury and liability exposure in Strength & Conditioning settings; however, it can be effectively minimized by implementing risk management strategies. The Strength & Conditioning coordinator is ultimately responsible for risk management, but all practitioners should be involved in the various aspects of the process. Eickhoff-Shemek (20) proposes a 4-step procedure [adapted from Head & Horn(33)] for applying standards of practice to the risk management process:

1. ***Identify and select standards of practice, as well as all applicable laws.*** Because so many standards of practice are published by various organizations, it is challenging for the Strength & Conditioning professional to be aware of all of them, and determine which ones are appropriate when implementing the risk management plan. In terms of participant safety, the most conservative or stringent standards in a given industry should generally be used.

2. ***Develop risk management strategies reflecting standards of practice and all applicable laws.*** This step involves writing procedures describing specific responsibilities and/or duties that staff would carry out in particular situations. The procedures should be written clearly, succinctly, and without excessive detail (too much detail may not allow the flexibility practitioners need in particular situations, and make implementation of those strategies difficult or impractical). Once the written procedures are finalized, they should be included in the staff policies and procedures manual.

3. ***Implement the risk management plan.*** Implementation of the risk management plan primarily involves staff training to ensure that the practitioner's daily conduct will be consistent with written policies and procedures, standards of practice, and applicable laws. The policies and procedures manual should be used in conjunction with the initial training of new employees, as well as during regular in-service training where all employees practice a particular (e.g., emergency) procedure. It is also important to explain to staff why it is essential to carry out such duties appropriately.

4. ***Evaluate the risk management plan.*** Like the law, standards of practice are not static and need to be updated periodically to reflect change. The risk management plan should be formally evaluated at least annually, as well as after each incidence of accident or injury to determine whether emergency procedures were performed correctly and what could be done to prevent a similar incident in the future.

Liability Exposure in the Strength & Conditioning Profession

While each Strength & Conditioning program and facility is unique, the NSCA Professional Standards & Guidelines Task Force has identified nine (9) areas of potential liability exposure, as delineated below. It is important to note that they are interrelated. For example, proper instruction and supervision is associated with personnel qualifications, as well as facility layout and scheduling issues. Noncompliance in any area can therefore affect others, and in turn compound the risk of liability exposure. Furthermore, the Strength & Conditioning practitioner and his/her employer share the corresponding duties and responsibilities.

Collectively within these liability exposure areas, eleven (11) standards and thirteen (13) guidelines for Strength & Conditioning practitioners have further been identified (these are presented in the next section of this document). These standards and guidelines are intended to serve as an authoritative and unbiased source for professional guidance. The rationale for each is summarized below.

1. Pre-participation Screening & Clearance.

A physical examination is imperative for all participants prior to participating in a Strength & Conditioning program (preferably conducted by a licensed physician). This should include a comprehensive health and immunization history (as defined by current guidelines from the CENTERS FOR DISEASE CONTROL & PREVENTION), as well as a relevant physical exam, part of which includes an orthopedic evaluation. Some type of cardiovascular screening, as discussed below, is also recommended. The Strength & Conditioning professional does not need a copy of the results, but must require a signed statement verifying proof of medical clearance to participate. Participants who are returning from an injury or illness, or who have special needs, must also be required to show proof of medical clearance prior to beginning or returning to a Strength & Conditioning program.

Currently there are no universally accepted standards for screening participants; nor are there approved certification procedures for health care professionals who perform such examinations. However, a joint Pre-participation Physical Evaluation Task Force of five organizations (AMERICAN ACADEMY OF FAMILY PHYSICIANS, AMERICAN ACADEMY OF PEDIATRICS, AMERICAN MEDICAL SOCIETY FOR SPORTS MEDICINE, AMERICAN ORTHOPAEDIC SOCIETY FOR SPORTS MEDICINE, and AMERICAN OSTEOPATHIC ACADEMY OF SPORTS MEDICINE) has published a widely accepted monograph including detailed instructions on performing a pre-participation history and physical exam, determining clearance for participation, and a medical evaluation form to copy and use for each examination (64). Additionally, the AMERICAN HEART ASSOCIATION and AMERICAN COLLEGE OF SPORTS MEDICINE have published statements on pre-participation screening for those involved in fitness-related activities (8,52). Relevant points can be summarized as follows:

- *Educational institutions have an ethical, medical and possible legal obligation to implement cost-efficient, pre-participation screening strategies (including a complete medical history and physical examination), and thereby ensure that high school and college athletes are not subject to unacceptable risks.* Support for such efforts, especially in large athletic populations, is mitigated by cost-efficiency considerations, practical limitations, and an awareness that it is not possible to achieve zero risk in competitive sports.

- *Pre-participation athletic screening should be performed by a properly qualified health care provider with the requisite training, medical skills, and background to reliably perform a physical examination, obtain a detailed cardiovascular history, and recognize heart disease.* A licensed physician is preferred, but an appropriately trained registered nurse or physician assistant may be acceptable under certain circumstances in states where non-physician health care workers are permitted to perform pre-participation screening. In the latter situation, however, a formal certification process should be established to demonstrate expertise in performing cardiovascular examinations.

- *A complete and careful personal and family medical history and physical examination designed to identify (or raise suspicion of) cardiovascular risk factors known to cause sudden death or disease progression is the best available and most practical approach to screening populations of competitive sports participants.* Such screening is an obtainable objective, and should be mandatory for all participants. Initially a complete medical history and physical examination should be performed before participation in organized high school athletics (grades 9 – 12). An interim history should be obtained in intervening years. For collegiate athletes, a comprehensive personal/family history and physical examination should be performed by a qualified examiner initially upon entering the institution, before beginning training and competition. Screening should be repeated every two years thereafter unless more frequent examinations are indicated; and an interim history and blood pressure measurement should be obtained each subsequent year to determine whether another physical examination, and possible further testing, is required (e.g., due to abnormalities or changes in medical status).

- *Health appraisal questionnaires should be used before exercise testing and/or training to initially classify participants by risk for triage and preliminary decision-making.* Following the initial health appraisal (and medical consultation and/or supervised exercise test, if indicated), participants can be further classified for exercise training on the basis of individual characteristics. When a medical evaluation/recommendation is advised or required, written and active communication between facility staff and the participant's personal physician or health care provider is strongly recommended. Furthermore, participants should be educated about the importance of obtaining a pre-participation health appraisal and medical evaluation/recommendation (if indicated), as well as the potential risks incurred without obtaining them.

2. Personnel Qualifications.
Qualified and knowledgeable personnel must be hired in order to properly supervise and instruct participants utilizing Strength & Conditioning facilities and equipment. A three-pronged approach is recommended.

First, the Strength & Conditioning practitioner should acquire expertise, and have a degree from a regionally accredited college/university in one or more of the topics comprising the "Scientific Foundations" domain identified in the Certified Strength & Conditioning Specialist® (CSCS®) Examination Content Description (58) (i.e. exercise/ anatomy, biomechanics, physiology, nutrition; Appendix A), or in a relevant subject (e.g., exercise/sport pedagogy, psychology, motor learning, training methodology, kinesiology). Note that the NSCA's Educational Recognition Program has been developed to recognize institutions of higher learning that meet such requirements; and also helps to identify an educational career path for the Strength & Conditioning profession. Likewise, practitioners should make an ongoing effort to acquire knowledge and competence in the content areas outside their primary area of expertise. In 2004, Commission on Accreditation of Allied Health Education (CAAHEP) began accrediting programs in exercise science and exercise physiology (http://www.coaes.org/accreditedprograms.html), so if the practitioner is unable to attend an NSCA-ERP institution, training in an accredited program in exercise science or exercise physiology will ensure that the "Scientific Foundations" are thoroughly covered.

Second, certifications offered through professional organizations with continuing education requirements as well as a code of ethics (e.g., the NSCA's CSCS® credential; Appendix B) are available to Strength & Conditioning practitioners interested in acquiring the necessary competencies. Another option is the NSCA's Fly Solo program (http://www.nsca-lift.org/Fly%20Solo%20Program/default.shtml), endorsed by the National High School

Athletic Coaches Association. Depending on the practitioner's specific duties, responsibilities, and interests, relevant certifications offered by other governing bodies, such as USA Weightlifting, may also be appropriate.

Third, a Strength & Conditioning practitioner's knowledge and skill development can be enhanced by applying the "performance team" concept (i.e. aligning a staff comprised of qualified professionals with interdependent expertise and shared leadership roles; Appendix C) (43,44). The scope of practice for the Strength & Conditioning profession has expanded and diversified to the point where it is very challenging, and often unrealistic for each individual to acquire proficiency in all areas. Furthermore, the productivity of a hierarchical (single-leader) work group can be significantly improved by applying the team model to staffing; and the same team dynamics that augment the group's effectiveness also tend to enhance individual members' learning and skill acquisition (43).

3. Program Supervision & Instruction.

It has been estimated that 80% of all court cases concerning athletic injuries deal with some aspect of supervision (12). Although serious accidents are rare in supervised exercise programs, the liability costs associated with inadequate or lax supervision are very expensive; and the plaintiff's recovery rate in such negligence lawsuits is almost 56% (54). The main causes of these incidents are poor facility maintenance, defective equipment, and inadequate instruction or supervision. The importance of staffing is readily apparent in each circumstance. For example, Rabinoff (66) reviewed 32 litigations arising from negligent weight training supervision, and found that three issues were raised by the plaintiff's attorneys in each case: poor instruction (or instructor qualifications); lax/poor supervision; and failure to warn of inherent dangers (in the equipment, facility, or exercise). The standard of care used in each case cited in the Rabinoff investigation was based upon statements established by the NSCA, ACSM or AAHPERD. A prevalent trend in these litigations is the issue of "professional instructor qualifications," i.e. appropriate degrees, recognized certifications, training, experience, and continuing education (refer to item 2, and Appendices A & B).

Participants in a Strength & Conditioning facility must be properly supervised and instructed at all times to ensure maximum safety, especially because of the athletic, skillful nature of many activities implemented in Strength & Conditioning programs, in accordance with the dynamic correspondence (74) and practice specificity (69,70) principles. Bucher & Krotee (12) recommend the following cardinal principles of supervision:

- Always be there.
- Be active and hands-on.
- Be prudent, careful, and prepared.
- Be qualified (e.g., accredited degree, CSCS, CPR, First Aid).
- Be vigilant.
- Inform participants of safety and emergency procedures.
- Know participants' health status.
- Monitor and enforce rules and regulations.
- Monitor and scrutinize the environment.

In addition to the physical presence of qualified professionals during Strength & Conditioning activities, effective instruction and supervision involves a range of practical considerations (5,7,16,35,36,38,49):

- A clear view of all areas of the facility, or at least the zone being supervised by each practitioner and the participants in it (this issue is related to facility design and layout, i.e. equipment placement with respect to visibility, versatility and accessibility; refer to item 4)
- The practitioner's proximity to the group of participants under his/her supervision, (i.e. the ability to see and communicate clearly with one another; and quick access to participants in need of immediate assistance or spotting)
- The number and grouping of participants, (i.e. to make optimal use of available equipment, space and time)
- The participants' age(s), experience level(s) and need(s)
- The type of program being conducted, (i.e. skillful/explosive free-weight movements vs. guided-resistance exercises, and corresponding need for coaching and spotting)

In theory, Strength & Conditioning activities should be scheduled to distribute activity throughout the day, and thereby promote an optimal training environment (refer to Appendix D for basic guidelines on calculating space needs). Even with careful planning, however, most facilities have times of peak usage (e.g., as a result of team practices and participants' class schedules). Beyond a certain point, it is impractical to simply spread Strength & Conditioning activities over a wider range of times in order to maintain an acceptable professional-to-participant ratio. The central issue is to accommodate peak usage times by providing adequate facilities and qualified staff, such that all participants are properly instructed and supervised (refer to item 2) (31,38,50,83). Furthermore, proper techniques, movement mechanics and safety should be emphasized in order to minimize injury risk and liability exposure (refer to Section 3 [Chapters 13 – 14] of Essentials of Strength Training & Conditioning7 as well as the NSCA position statements (15,22,40,61,76,86,87) summarized in Appendix E). Likewise, instructional methods, procedures, and progressions that are consistent with accepted professional practices should be utilized. (1,7,10,15,21,22,24-27,31,32,39,40,42,45-47,55,59,62,69-72,74-76,78-82,84-89).

While reasonable steps should be taken to make optimal use of the Strength & Conditioning facility and staff, a potential mismatch between available resources and demand for programs and services exists in many institutions during times of peak usage. As explained below in the Injury Trends, Litigations & Stan-

dard of Care Load discussion, the combined effects of explosive growth in collegiate/scholastic athlete participation (especially among females), corresponding liability exposures, and equal opportunity/access laws create a standard of care load and liability challenge for Strength & Conditioning practitioners and their employers. A two-pronged approach can thus be recommended.

First, Strength & Conditioning activities should be planned, and the required number of qualified staff should be present, such that recommended guidelines for minimum average floor space allowance per participant (100 ft^2), professional-to-participant ratios (1:10 junior high school, 1:15 high school, 1:20 college), and number of participants per barbell or training station (up to 3) are applied during peak usage times (5,7,38,42). In ideal circumstances, this corresponds to one Strength & Conditioning practitioner per 3 – 4 training stations and/or 1,000 ft^2 area (junior high school); 5 training stations and/or 1,500 ft^2 area (high school); or 6 – 7 training stations and/or 2,000 ft^2 area (college), respectively. Professional discretion can be used to adjust these guidelines with respect to the practical considerations discussed above.

Second, Strength & Conditioning practitioners and their employers should work together toward a long-term (e.g., 3 – 5 yr) goal of matching the professional-to-participant ratio in the Strength & Conditioning facility to each sport's respective coach-to-athlete ratio. This is relatively straightforward in collegiate settings where the NCAA limits the number of coaches per sport in Division I (NCAA Division I Manual, Bylaw 11.7; updated annually), and also provides sports participation data (refer to Appendix F; note that coach-to-athlete ratios for individual-event sports are lower than those for team sports) (56). In the absence of similar information in other (e.g., scholastic) settings, such determinations can be made on an individual institution basis; or possibly according to trends within a district, division or state.

4. Facility & Equipment Set-Up, Inspection, Maintenance, Repair & Signage.

In some cases, Strength & Conditioning professionals are involved in all phases of facility design and layout. Perhaps more commonly, however, they assume responsibility for an existing facility, in which case the opportunities to plan or modify it may be limited. In either case, the Strength & Conditioning practitioner and his/her employer are jointly responsible for maximizing the safety, effectiveness and efficiency of the facility, such that the allotted space and time can be put to optimal use (refer to Greenwood [Chapter 21, pp. 543 – 568] in Essentials Of Strength Training & Conditioning7 as well as the table on calculating equipment space needs in Appendix D).

The Strength & Conditioning professional should establish written policies and procedures for equipment/facility selection, purchase, installation, set-up, inspection, maintenance and repair. Safety audits and periodic inspections of equipment, maintenance, repair and status reports should all be included. Manufacturer-provided user's manuals, warranties and operating guides, as well as other relevant records (e.g., pertaining to equipment selection, purchase, installation, set-up, inspection, maintenance and repair; refer to item 6), should be kept on file and followed regarding equipment operation and maintenance12.

The Strength & Conditioning professional should understand the concept of "product liability", which refers to the legal responsibilities of a product manufacturer and/or vendor if a person sustains injury or damage due primarily to a defect or deficiency in design or manufacturing9. While this issue applies to manufacturers and vendors, there are actions and/or behaviors that can increase the Strength & Conditioning professional's responsibility, consequently putting him/her at risk for claims. The following steps should be taken to minimize liability exposures caused by Strength & Conditioning equipment: (12,16,48)

- Buy equipment exclusively from reputable manufacturers, and be certain that it meets existing standards and guidelines for professional/commercial (not home) use.
- Use equipment only for the purpose intended by the manufacturer; do not modify it from the condition in which it was originally sold unless such adaptations are clearly designated and instructions for doing so are included in the product information.
- Post any signage provided by the manufacturer on (or in close proximity to) the equipment.
- Do not allow unsupervised participants to utilize equipment.
- Regularly inspect equipment for damage and wear that may place participants at risk for injury.

5. Emergency Planning & Response.

An emergency response plan is a written document that details the proper procedures for caring for injuries that may occur to participants during activity (refer to Appendix G for sample guidelines for the collegiate environment). While all Strength & Conditioning facilities should have such a document, it is important to appreciate that the document itself does not save lives. Indeed, it may offer a false sense of security if it is not backed up with appropriate training and preparedness by astute, professional staff. Therefore, all personnel in Strength & Conditioning facilities must:

- Know the emergency response plan and the proper procedures for dealing with an emergency (i.e. location of phones, activating emergency medical services, designated personnel to care for injuries, ambulance access, and location of emergency supplies).
- Review and practice emergency policies and procedures regularly (i.e. at least quarterly).
- Maintain current certification in guidelines for cardiopulmonary resuscitation and automated external defibrillator (CPR-AED) as established by the AMERICAN HEART ASSOCIATION & INTERNATIONAL LIAISON COMMITTEE ON RESUSCITATION (2). Several

organizations, such as the American Heart Association, the Red Cross, the National Safety Council, and St. John Ambulance, offer acceptable certifications. First Aid training and certification may also be necessary if Sports Medicine personnel such as an ATC or MD are not immediately available.

- Adhere to universal precautions for preventing exposure to and transmission of blood-borne pathogens, as established by the CENTERS FOR DISEASE CONTROL & PREVENTION (14) and OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION (60).

6. Records & Record Keeping.

Documentation is fundamental to the management of Strength & Conditioning programs and facilities. In addition to developing and maintaining a policies and procedures manual [refer to Epley (Chapter 22, pp. 569 – 588) in Essentials Of Strength Training & Conditioning (7)], a variety of records should be kept on file: (12)

- Manufacturer provided user's manuals, warranties and operating guides; and equipment selection, purchase, installation, set-up, inspection, maintenance and repair records

- Personnel credentials

- Professional standards and guidelines

- Safety policies and procedures, including a written emergency response plan (refer to item 5; Appendix G)

- Training logs, progress entries and/or activity instruction/ supervision notes

- Injury/incident reports, pre-participation medical clearance, and return to participation clearance documents (after the occurrence of an injury, illness, change in health status or an extended period of absence) for each participant under their supervision

- In collegiate and scholastic settings, athletes are required to sign protective legal documents (e.g., informed consent, agreement to participate, waiver; refer to Appendix H) covering all athletically-related activities, including Strength & Conditioning; however in other settings, the Strength & Conditioning professional should consider having participants sign such legal documents.

  Medical records should be kept on file as long as possible in the event of an injury claim. Statutes of limitations (i.e. the time in which individuals may file a lawsuit) vary from state to state, so it is a good practice to maintain files indefinitely or consult with a legal authority (37). As is the case with other organizational and administrative tasks, adequate staff are necessary to properly keep and maintain such records.

7. Equal Opportunity & Access.

Federal, state, and possibly local laws and regulations prohibit discrimination or unequal treatment (e.g., according to race, creed, national origin, gender, religion, age, handicap/disability or other such legal classifications) in most organizations, institutions and professions. For example, practitioners employed in federally-funded educational (i.e. collegiate or scholastic) settings must comply with civil rights statutes including Title IX of the Education Amendments of 1972, which mandates gender equity in providing opportunity and access to athletic facilities, programs and services. The Strength & Conditioning professional must obey the letter and spirit of these laws when working with participants as well as staff.

8. Participation in Strength & Conditioning Activities by Children.

Resistance training can be an important component of youth fitness, health promotion and injury prevention. Such programs are safe when properly designed and supervised; and can increase children's strength, motor fitness skills, sports performance, psychosocial well-being and overall health (22,23). Indeed, many of the benefits associated with adult Strength & Conditioning activities are attainable by prepubescent and adolescent participants who participate in age-specific training. However, it is important for the Strength & Conditioning practitioner to take certain precautions with children.

In a 20-year retrospective review of weight training injuries that were evaluated and/or treated in U.S. hospital emergency departments (based on NEISS data from the U.S. CONSUMER PRODUCT SAFETY COMMISSION), Jones et al. (41) found an alarming incidence of injuries to young children. Children <7 years of age are almost 6 times more likely to be injured than those >15 years of age, with the majority (80%) resulting from playing with or around weight training equipment in the home. The CPSC estimates that about 8,700 children <5 years of age are injured each year with exercise equipment (e.g., include stationary bicycles, treadmills, and stair climbers), with an additional 16,500 injuries per year to children 5 – 14 years of age ("Prevent Injuries to Children From Exercise Equipment"; CPSC Document #5028). This has clear implications regarding the importance of supervising children in these age groups, and exposing them to such equipment or facilities. In support of this, Malina (51) reported that estimated injury rates were 0.176, 0.053, and 0.055 per 100 participant-hours in the programs examined in resistance training investigations in pre- and early-pubertal youth. Twenty-two reports were examined and the investigations employed high levels of supervision and low instructor to participant ratios, which was thought to be the reason for the extremely low injury rates.

Another area of potential injury concern for children and pubescents/adolescents is the use of max testing (1RM). While Faigenbaum and others (22,23) have shown max testing to be safe in these age groups, it is emphasized that maintaining technique is critical. A multi-rep max (e.g., 3 – 5 RM) may even be preferred to a 1RM in certain situations, especially where train-

ing age (i.e. number of years experience in resistance training) is less than 3 – 4 years or physical development is behind what is expected for the chronological age. Nonetheless, attention to NSCA-prescribed guidelines (7) for lifting technique should always be followed.

9. Supplements, Ergogenic Aids & Drugs.
The issue of using ergogenic aids, including nutritional supplements and drugs, is complicated by several factors. First, dietary supplements are regulated as foods rather than drugs according to the Dietary Supplement Health & Education Act of 1994. Consequently, many people have concerns regarding quality control/assurance and possible consequences for consumers. Strength & Conditioning practitioners are often approached for advice on nutrition and supplementation, and therefore should be aware of the following:

- The FEDERAL TRADE COMMISSION has primary responsibility for advertising claims. Simply stated, advertising for any product, including dietary supplements must be truthful, substantiated, and not misleading.

- The U.S. FOOD & DRUG ADMINISTRATION has primary responsibility for product labeling claims. The legislation enforced by this agency includes current good manufacturing practice regulations, and selected portions of the Federal Food, Drug & Cosmetic Act related to dietary supplements. Note that the U.S. Pharmacopeia & National Formulary, which establishes manufacturing practices for nutritional supplements (i.e. standards for identity, strength, quality, purity, packaging, labeling and storage), is cited as a primary resource in this legislation.

A second complicating factor is that the boundaries between dietary supplements, drugs and conventional foods are not clear. This is especially problematic for competitive athletes and coaches, because such products may contain substances that are banned by one or more sport governing bodies despite the manufacturer's or vendor's use of terms such as "herbal", "legal", "natural", "organic", "safe and effective", etc. Furthermore, supplement manufacturers are constantly developing new products with different combinations of ingredients, making it more challenging to identify those that may be problematic.

A third factor is that banned substance policies and procedures, testing protocols, and related rules and regulations differ among sport governing bodies (e.g., MLB, NBA, NCAA, NFL, NHL, USOC). Therefore, a compound that is legal according to one governing body may be illegal according to another. Furthermore, Strength & Conditioning practitioners at NCAA member institutions need to be aware of Bylaw 16.5.2.2: "An institution may provide only non-muscle-building nutritional supplements to a student-athlete at any time for the purpose of providing additional calories and electrolytes, provided the supplements do not contain any NCAA banned substances." The NCAA Committee on Competitive Safeguards & Medical Aspects of Sports has subsequently developed lists of permissible vs. non-permissible nutritional supplements*, although these will probably change as the market continues to evolve and new products are evaluated.

*Note: According to the legislative assistance section of the August 14, 2000 NCAA News (vol. 37 no. 7; p. 24), there is an error on p. 209 of the 2000-01 NCAA Division I Manual. The second sentence should read: "Permissible non-muscle-building nutritional supplements are identified according to the following classes: carbohydrate/electrolyte drinks, energy bars, carbohydrate boosters, and vitamins and minerals."

Injury Trends & Standard of Care Load: Effects of Rising Athletic Participation

The lack of qualified instruction and supervision can be identified, either directly or indirectly, as a causative factor in the available information on injuries and litigations associated with weight training. In some cases this is clearly documented (41,67), while in others it can be inferred. For example, the relatively high coach-to-athlete ratio (and corresponding standard of care) in Olympic-style weightlifting is a likely reason for the low incidence of injury in this sport despite its technical and athletic nature (30,77). Based on the collective information summarized below, it is difficult to overemphasize the fundamental importance of qualified staffing in fulfilling the institution's and Strength & Conditioning professional's shared legal duties for safety, supervision and standard of care.

Collegiate Settings.
Year-round Strength & Conditioning activities are now the rule rather than the exception in collegiate athletic programs. According to NCAA data on student-athlete participation (56), the overall number of participants increased 66% (from 231,445 to 384,742) between 1981 – 82 and 2004 – 05. Of special interest are the changes in female participation during this period. The relative increase in women's participation was 156% (from 64,390 to 164,998) as compared with 32% for men (from 167,055 to 219,744); whereas absolute growth was two-fold higher.

The total number of, and time of participation in, athletically-related activities has also expanded accordingly. While desirable in terms of preparation, the allowance of nontraditional seasons, off-season skill instruction, and year-round Strength & Conditioning activities increases each student-athlete's liability exposure and potential for injury, as well as the corresponding standard of care load placed on support staff. The NATA recently published a detailed overview of injury incidence in collegiate athletics, and found that it has risen sharply and consistently with the increase in participants and exposures (73). The potential liability issues for Strength & Conditioning professionals and their employers are further compounded by the explosive rise in female participation, and laws mandating equal opportunity and access to athletic programs, services, and facilities (refer to item 7).

Scholastic Settings.
The sheer number of high school athletes, and growing emphasis on year-round Strength & Conditioning activities in scholastic settings, presents a tremendous challenge in terms of demand for

standard of care, and accompanying liability exposure. Student-athlete participation in organized high school sports increased 65.1% (from less than 4 million to over 6.5 million) between 1971 and 1999 – 2000 (57). Of special interest are the changes in female participation during this period. The relative increase in girls' participation was 810% (from about 0.3 million to 2.7 million) as compared with 5% for boys (from about 3.7 million to 3.9 million); whereas absolute growth was more than twelve-fold higher.

As is the case in collegiate settings, the combination of increasing participation in athletic activities (especially among females), a corresponding rise in liability exposures, and laws mandating equal opportunity and access creates a standard of care load—and challenge in terms of legal duties—for Strength & Conditioning practitioners and their employers (refer to item 7).

Other Populations.
Reeves et al. (67) performed a study of NEISS data in 1986 and observed that, while serious injuries are relatively rare, an estimated 43,400 weight training injuries were evaluated/treated in hospital emergency departments out of a total of 5.6 million visits for all sports. By comparison, emergency room visits for weight training injuries in 1995 totaled 56,400 out of more than 5.4 million visits for all sports, representing a 9-year increase of approximately 30%.

Studies examining the incidence and types of weight training injury report varying injury rates, but similar distributions of injury types. Brown & Kimball (11) found that 39.4% of competitive adolescent powerlifters sustained injuries in training, with an injury rate of 0.0027 per 100 hours of participation. In contrast, Risser et al. (68) observed that only 7.6% of adolescent football players in a supervised weight training program sustained injuries. Zemper (90) found only a 0.3% rate of weight training injuries in a 4-year study of college football players participating in supervised training. While risk-factor studies of acute weight training injuries are lacking, recognized contributing factors include poor technique, lack of supervision, skeletal immaturity, and steroid abuse (11,53,67a,68). Some of these factors are confirmed in the NCSA (22) and ACSM (23) published statements on youth resistance training. Chronic weight training injuries, on the other hand, have been attributed to excessive weight training and improper training techniques (67b). Each of these factors can be positively influenced with qualified instruction.

Jones et al. (41) conducted a 20-year retrospective review of NEISS data on weight training injuries that were evaluated and/or treated in U.S. hospital emergency departments from October 1978 through December 1998. An estimated 980,173 injuries related to weight training activity or equipment occurred nationwide during the study period, representing a 35% increase over 20 years (note that the population increased by 20% during the same period). While adolescent/young adult males (15 – 24 years old) had the highest reported incidence of injury, alarming increases in injury rate were reported for females and older males, most likely because of growing participation in these groups. Boys (5 – 14 years old) were the only group reporting a decline in injury rate. The most common recorded venues of injury were the home (40.2%), sports or recreation sites (17.8%) and school (9.4%). Based on available reports, the most common causes of injury appear to be unsafe behavior (63%), equipment malfunction (37%), lack of supervision (30%) and inattention (10%). Once again, these factors can be positively influenced with qualified instruction and supervision.

Weight training injuries seem to be associated with various methods (e.g., bodybuilding, powerlifting, Olympic-style weightlifting, fitness/recreational weight training) and equipment (e.g., free weights, machines). Of these, explosive types of training and free-weight apparatus are often incorrectly believed to be inherently more dangerous than other methods. Hamill (30) conducted a survey of sport injury rates in 13 – 16 year old school children, and found that the injury rate in weightlifting (0.0017 per 100 hours) is even lower than that for weight training (0.0035 per 100 hours); and that each of these injury rates were much lower than those observed for other, more popular sports (e.g., basketball 0.03; football 0.10; gymnastics 0.044; athletics 0.57). Stone et al. (77) reviewed the research literature on injury potential and safety aspects of Olympic-style weightlifting movements, and concluded that injuries related to competitive weightlifting are neither excessive nor serious when compared to other sports. Calhoon & Fry (13) analyzed weightlifting injury reports at the U.S. Olympic Training Centers over a 6-year period, and found that elite weightlifters' injuries are strains, tendinitis or sprains typical of acute (59.6%) or chronic (30.4%) overuse or inflammation, rather than recurrences or complications. There were no indications of the traumatic problems commonly observed in other sports. Injury rates were calculated to be 3.3 per 1000 hours of weightlifting exposure, and the recommended number of training days missed for most (90.5%) injuries was one day. These authors concluded that weightlifting injury patterns and rates are similar to those reported for other sports and activities.

1. PRE-PARTICIPATION SCREENING & CLEARANCE

Standard 1.1

Strength & Conditioning professionals must require participants to undergo health care provider screening and clearance prior to participation, in accordance with instructions specified by the AAFP-AAP-AMSSM-AOSSM-AOASM Pre-participation Physical Evaluation Task Force (64), the AHA & ACSM (8,52), as well as relevant governing bodies and/or their constituent members [e.g., the NCAA (63) for collegiate athletes; state legislatures, or individual state high school athletic associations/ districts for scholastic athletes]. In most cases in the collegiate athletics environment, the Athletic Training staff is involved in this process along NATA guidelines. In recreational activity programs, Strength & Conditioning professionals must require participants to undergo pre-participation screening and clearance in accordance with AHA & ACSM recommendations (8,52). For children, the clearance decision must include a determination or certification than the child has reached a level of maturity allowing participation in such activities as addressed in the "Participation in Strength & Conditioning Activities by Children" standards statement (refer to item 8).

Guideline 1.1

Strength & Conditioning professionals should cooperate with a training participant's health care providers at all times, and provide service in the participant's best interest according to instructions specified by such providers.

2. PERSONNEL QUALIFICATIONS

Guideline 2.1

The Strength & Conditioning practitioner should acquire a bachelor's or master's degree from a regionally accredited college or university (verification by transcript or degree copy) in one or more of the topics comprising the "Scientific Foundations" domain identified in the Certified Strength & Conditioning Specialist® (CSCS®) Examination Content Description (58) (Appendix A), or in a relevant subject. An ongoing effort should also be made to acquire knowledge and skill in the other content areas.

Guideline 2.2

The Strength & Conditioning practitioner should achieve and maintain professional certification(s) with continuing education requirements and a code of ethics, such as the CSCS® credential offered through the NSCA (Appendix B). Depending on the practitioner's scope of activities, responsibilities, and knowledge requirements, relevant certifications offered by other governing bodies may also be appropriate.

Guideline 2.3

The productivity of a Strength & Conditioning staff, as well as learning and skill development of individual members, should be enhanced by aligning a performance team comprised of qualified practitioners with interdependent expertise and shared leadership roles (Appendix C). Once the team is assembled, respective activities and responsibilities from the "Practical/Applied" domain identified in the Certified Strength & Conditioning Specialist® (CSCS®) Examination Content Description (58) (Appendix A), as well as appropriate liaison assignments, should be delegated according to each member's particular "Scientific Foundations" expertise.

3. PROGRAM SUPERVISION & INSTRUCTION

Standard 3.1

Strength & Conditioning programs must provide adequate and appropriate supervision with well-qualified and trained personnel, especially during peak usage times. To achieve maximum health, safety, and instruction, Strength & Conditioning professionals must be present during Strength & Conditioning activities; have a clear view of the entire facility (or at least the zone being supervised by each practitioner) and the participants in it; be physically close enough to the participants under their supervision to be able to see and clearly communicate with them; and have quick access to those in need of spotting or assistance.

Standard 3.2

In conjunction with appropriate safety equipment (e.g. power racks), attentive spotting must be provided for participants performing activities where free weights are supported on the trunk or moved over the head/face (refer to Earle & Baechle [Chapter 14, pp. 325 – 376] in Essentials Of Strength Training & Conditioning (7)).

Guideline 3.1

Strength & Conditioning activities should be planned, and the requisite number of qualified staff (refer to item 2) should be available such that recommended guidelines for minimum average floor space allowance per participant (100 ft^2), professional-to-participant ratios (1:10 junior high school, 1:15 high school, 1:20 college), and number of participants per barbell or training station (3) are achieved during peak usage times (5,7,38,42). Younger participants, novices or special populations engaged in such Strength & Conditioning activities should be provided with greater supervision (refer to item 8). Strength & Conditioning practitioners and their employers should work together toward a long-term goal of matching the professional-to-participant ratio in the Strength & Conditioning facility to each sport's respective coach-to-athlete ratio (e.g., refer to Appendix F).

4. FACILITY & EQUIPMENT SET-UP, INSPECTION, MAINTENANCE, REPAIR & SIGNAGE

Standard 4.1

Exercise devices, machines and equipment, including free weights, must be assembled, set up and placed in activity areas in full accordance with manufacturer's instructions, tolerances and recommendations; and with accompanying safety signage, instruction placards, notices and warnings posted or placed according to ASTM standards (3,4) so as to be noticed by users prior to use. In the absence of such information, professionals must complete these tasks in accordance with authoritative information available from other sources.

Standard 4.2

Prior to being put into service, exercise devices, machines or free weights must be thoroughly inspected and tested by Strength & Conditioning professionals to ensure that they are working and performing properly, and as intended by the manufacturer.

Standard 4.3

Exercise machines, equipment and free weights must be inspected and maintained at intervals specified by manufacturers. In the absence of such specifications, these items must be regularly inspected and maintained according to the Strength & Conditioning practitioner's professional judgment.

Standard 4.4

Exercise devices, machines, equipment and free weights which are in need of repair, as determined by regular inspection or as reported by users, must be removed from service and taken out of use until serviced and repaired; and be re-inspected and tested to ensure that they are working and performing properly before being returned to service. If such devices are involved in incidents of injury, legal advisors or risk managers must be consulted for advice prior to service/repair or destruction.

Guideline 4.1

Strength & Conditioning professionals and their employers should ensure that facilities are appropriate for Strength & Conditioning activities. Factors to be reviewed and approved prior to activity include, but are not limited to, floor surface, lighting, room temperature and air exchange (refer to Greenwood [Chapter 21, pp. 543 – 568] in Essentials Of Strength Training & Conditioning (7)).

Guideline 4.2

Manufacturer provided user's manuals, warranties and operating guides should be preserved and followed (refer to item 6).

Guideline 4.3

All equipment, including free weights, should be cleaned and/or disinfected regularly as deemed necessary by staff. Users should be encouraged to wipe down skin-contact surfaces after each use.

5. EMERGENCY PLANNING & RESPONSE

Standard 5.1

Strength & Conditioning professionals must be trained and certified in current guidelines for cardiopulmonary resuscitation (CPR) established by AHA/ILCOR (2); as well as universal precautions for preventing disease transmission established by the CDC (14) and OSHA (60). First Aid training/certification is also necessary if Sports Medicine personnel (e.g., MD or ATC) are not immediately available during Strength & Conditioning activities. New staff engaged in Strength & Conditioning activities must comply with this standard as soon as possible after employment.

Standard 5.2

Strength & Conditioning professionals must develop a written, venue-specific emergency response plan to deal with injuries and reasonably foreseeable untoward events within each facility. The plan must be posted at strategic areas within each facility, and practiced and rehearsed at least quarterly. The emergency response plan must be initially evaluated (e.g., by facility risk managers, legal advisors, medical providers and/or off-premise emergency response agencies) and modified as necessary at regular intervals. As part of the plan, a readily accessible and working telephone must be immediately available to summon on-premise and/or off-premise emergency response resources.

Guideline 5.1

The components of a written and posted emergency response plan should include: planned access to a physician and/or emergency medical facility when warranted, including a plan for communication and transportation between the venue and the medical facility; appropriate and necessary emergency care equipment on-site that is quickly accessible; and a thorough understanding of the personnel and procedures associated with the plan by all individuals (e.g., refer to Appendix G).

6. RECORDS & RECORD KEEPING

Guideline 6.1

In conjunction with written policies and procedures, Strength & Conditioning professionals should develop and maintain various records including: manufacturer-provided user's manuals, warranties and operating guides; equipment selection, purchase, installation, set-up, inspection, maintenance and repair records; personnel credentials; professional standards and guidelines; safety policies and procedures, including a written emergency response plan (refer to item 5); training logs, progress entries and/or activity instruction/supervision notes; injury/incident reports, pre-participation medical clearance, and return to participation clearance documents. In settings where participants

are not otherwise required to sign protective legal documents (e.g., informed consent, agreement to participate, waiver; refer to Appendix H) covering all athletically related activities, the Strength & Conditioning professional should have such legal documents prepared for participants under his/her supervision. These records should be preserved and maintained for a period of time determined by professional legal advice and consultation.

7. EQUAL OPPORTUNITY & ACCESS

Standard 7.1

Strength & Conditioning professionals and their employers must provide facilities, training, programs, services and related opportunities in accordance with all laws, regulations and requirements mandating equal opportunity, access and non-discrimination. Such federal, state and possibly local laws and regulations apply to most organizations, institutions and professionals. Discrimination or unequal treatment based upon race, creed, national origin, sex, religion, age, handicap/disability or other such legal classifications is generally prohibited.

8. PARTICIPATION IN STRENGTH & CONDITIONING ACTIVITIES BY CHILDREN

Guideline 8.1

Children under seven (7) years of age should not be permitted to engage in Strength & Conditioning activities with free weights or exercise devices/machines in facilities designed for use by adults and adolescents, and should be denied access to such training areas. Other forms of Strength & Conditioning activities may be beneficial for such children, and should be recommended according to the practitioner's professional judgment, and with a greater degree of instruction and supervision than that supplied to adolescents and adults. Children participating in such activities should be cleared as specified in the NSCA's "Standard for Pre-participation Screening & Clearance" (refer to item 1).

Guideline 8.2

Children between seven (7) and fourteen (14) years of age who have reached a level of maturity allowing participation in specified Strength & Conditioning activities, as determined and certified by their medical care provider (or by the Strength & Conditioning professional acting in concert with a child's medical care provider), and after clearance for participation as specified in the NSCA's "Standard for Pre-participation Screening & Clearance" (refer to item 1), should be individually assessed by the Strength & Conditioning professional in conjunction with the child's parent(s)/guardian(s)/custodian(s) and health care provider(s) to determine if such children may engage in such activities in areas containing free weights and exercise devices/machines generally used by adults and older children. If so permitted, such activities should be developed and implemented according to the practitioner's professional judgment, in conjunction with the child's health care provider(s), and with a greater degree of instruction and supervision than that supplied to adolescents and adults.

Guideline 8.3

Children fourteen (14) years of age and older who, according to the Strength & Conditioning practitioner's professional judgment, have reached a level of maturity allowing them to engage in specified Strength & Conditioning activities (provided they have been cleared for participation as specified in the NSCA's "Standard for Pre-participation Screening & Clearance"; refer to item 1), may engage in such activities in areas containing free weights and exercise devices/machines generally used by adults, and with a greater degree of instruction and supervision than that supplied to adult populations while training.

9. SUPPLEMENTS, ERGOGENIC AIDS & DRUGS

Standard 9.1

Strength & Conditioning professionals must not prescribe, recommend or provide drugs, controlled substances or supplements that are illegal, prohibited, or harmful to participants for any purpose including enhancing athletic performance, conditioning or physique. Only those substances that are lawful and have been scientifically proven to be beneficial, or at least not harmful, may be recommended or provided to participants by Strength & Conditioning professionals, and only to individuals age 18 or above.

APPENDIX A. Strength & Conditioning Practitioner Definition

In 1996, and again in 2004, the NSCA Certification Department (www.nsca-cc.org) and its examination service (APPLIED MEASUREMENT PROFESSIONALS) conducted a Job Analysis study with the purpose of surveying the activities, responsibilities, and knowledge requirements of a Certified Strength & Conditioning Specialist® (CSCS®). The results were used to describe the job activities of the CSCS in sufficient detail to provide a basis for the development of a professional, job-related certification examination that will certify S&C specialists as competent professionals. An early step in the process was to create a "practitioner definition". Essentially, this definition is a job description that establishes the legal and professional scope of practice of the appropriate activities of a CSCS (refer to Appendix B): (6,7)

Certified Strength & Conditioning Specialists are professionals who practically apply foundational knowledge to assess, motivate, educate, and train athletes for the primary goal of improving sport performance. They conduct sport-specific testing sessions, design and implement safe and effective strength training and conditioning programs, and provide guidance for athletes in nutrition and injury prevention. Recognizing their area of expertise is separate and distinct from the medical, dietetic, athletic training, and sport coaching fields, Certified Strength & Conditioning Specialists consult with and refer athletes to these professionals when appropriate.

The CSCS Job Analysis study evaluated the results of a questionnaire sent to 1,020 randomly selected NSCA members who were CSCS-certified as of October 1996. Respondents were asked to assign an importance to 112 tasks that a CSCS typically performs on the job. From this data, the NSCA's CSCS Job Analysis Committee determined the inclusion criteria of the tasks (5 of the original 112 were excluded), the distribution of tasks within each CSCS exam domain and its subcategories, as well as distribution of the exam question type (i.e. recall, application, and analysis) within each domain and its subcategories. The document resulting from the CSCS Job Analysis study is the "CSCS Examination Content Outline" (refer to the abbreviated summary below), which forms the basis for the Certified Strength & Conditioning Specialist (CSCS) Examination Content Description (58), an exam preparation resource available through the NSCA. The 2004 questionnaire was sent to 770 employers of certified individuals and the new results were used to change the format of the exam, with more emphasis placed on the practical/applied section.

CSCS® Examination Content Outline

Adapted from: Certified Strength & Conditioning Specialist® (CSCS®) Examination Content Description59

Scientific Foundations

I. Exercise Sciences (57 questions)

A. Develop training programs that demonstrate an understanding of human muscle physiology.

B. Develop training programs that demonstrate an understanding of human neuromuscular adaptations.

C. Develop training programs that demonstrate an understanding of the basic principles of human biomechanics with respect to exercise selection, execution, and sport performance.

D. Develop training programs that demonstrate an understanding of human bone, muscle, and connective tissue adaptations.

E. Develop training programs that demonstrate an understanding of human bioenergetics and metabolism.

F. Develop training programs that demonstrate an understanding of human neuroendocrine responses.

G. Develop training programs that demonstrate an understanding of human cardio-pulmonary anatomy and physiology.

H. Develop training programs that demonstrate an understanding of acute and chronic physiological responses and adaptations to aerobic and anaerobic exercise.

I. Develop training programs that demonstrate an understanding of the anatomical, physiological, and biomechanical differences of athletes.

J. Use sport psychology techniques to enhance the training and/or performance of an athlete.

K. Explain the effects, risks, and alternatives of various performance-enhancing substances and methods.

II. Nutrition (23 questions)

A. Explain nutritional factors affecting health and performance.

B. Explain the techniques to manipulate food choices and training methods to maximize performance.

C. Recognize signs, symptoms, and behaviors associated with eating disorders.

D. Recognize the nature of an athlete's nutritional status and determine the appropriateness of a referral to a registered dietician or related nutritional professional.

III. New "untried" questions (10 non-scored questions)

Practical/Applied

I. Program Design (40 questions)

A. Design training programs that maximize performance by prescribing various training methods and modes based upon an athlete's health status, strength and conditioning levels, and training goals.

B. Design training programs that maximize performance by selecting exercises based upon an athlete's health status, strength and conditioning levels, and training goals.

C. Design training programs that maximize performance by applying the principles of exercise order based upon an athlete's health status, strength and conditioning levels, and training goals.

D. Design training programs that maximize performance by determining and prescribing appropriate loads/resistances (including heart rate guidelines) based upon an athlete's health status, strength and conditioning levels, and training goals.

E. Design training programs that maximize performance by determining and prescribing appropriate volumes (defined as sets x reps) based upon an athlete's health status, strength and conditioning levels, and training goals.

F. Design training programs that maximize performance by determining and prescribing appropriate work/duration and rest periods and training frequencies based upon an athlete's health status, strength and conditioning levels, and training goals.

G. Design training programs that maximize performance by utilizing the principles of periodization.

H. Design training programs that maximize performance and/or decrease injury susceptibility by prescribing exercises to develop and/or maintain muscular balance between antagonistic muscles, muscle groups, and/or body parts.

I. Communicate with the athletic medicine staff and/or medical professional to coordinate the rehabilitation/reconditioning of an athlete.

II. Exercise Techniques (39 questions)

A. Describe and instruct flexibility exercises.

B. Describe and instruct conditioning exercises.

C. Describe and instruct plyometric exercises.

D. Describe and instruct strength/power training exercises.

E. Describe and instruct spotting procedures.

III. Organization & Administration (11 questions)

A. Establish policies and procedures associated with the day-to-day operation of the strength and conditioning facility.

B. Determine the layout of the facility for effective use of time and space.

C. Maintain equipment and facility to provide a safe training environment.

IV. Testing & Evaluation (20 questions)

A. Select and administer appropriate tests to maximize test reliability and validity.

B. Evaluate and identify the significance of testing results.

V. New "untried" questions (10 non-scored questions)

APPENDIX B. Certified Strength & Conditioning Specialist® (CSCS®)

The CSCS certification exam program was initiated in 1985 to identify individuals who possess the knowledge and skills to design and implement safe and effective Strength & Conditioning programs. This certification program encourages a higher level of competence among practitioners, which in turn, raises the quality of strength training and conditioning programs to athletes by those who are CSCS-certified.

The CSCS educates and trains primarily athletes in proper strength training and conditioning practices. These professionals are a diverse group; however, the primary practitioners are Strength & Conditioning coaches, athletic trainers, and physical therapists. CSCS professionals work in a variety of environments, including high school, college, university and professional institutions, Sports Medicine clinics, health and fitness clubs, corporate wellness centers, and in professional sports. Competencies assessed in the four-hour CSCS examination were determined via a national task analysis conducted by an independent professional examination service. Thus, Strength & Conditioning professionals identified the competency areas. Every step in the process leading to the development of valid certification exams met the NCCA's stringent guidelines. Pass/fail rates and reliability statistics are published annually. The NSCA's Certification Exam Program is the only fitness-related certification program to provide public disclosure of this information.

Writers of the exams include renowned practitioners, researchers, educators, and psychometricians. While there are many certification programs associated with physical training, the CSCS certification examination program was the first specifically designed to assess the competencies of those who strength train and condition athletes.

Accreditation

In 1993 the NSCA certification exam program became the first, and is still accredited by the esteemed NATIONAL COMMISSION FOR CERTIFYING AGENCIES*. The rigorous CSCS and NSCA Certified Personal Trainer® (NSCA-CPT) examinations are the most challenging in the industry.

*Note: The NCCA is the accreditation body of the NATIONAL ORGANIZATION FOR COMPETENCY ASSURANCE, a non-profit non-government agency that promotes excellence in competency assurance for practitioners in all occupations and professions. The NCCA measures the ability of certifying organizations in any industry to accurately discriminate between qualified and unqualified professionals. To earn NCCA recognition, a credentialing body must demonstrate an ability to develop and administer psychometrically sound examinations that effectively discriminate between qualified and unqualified professionals through a series of criteria, including:

- The certifying organization is nonprofit; and is responsible for all decisions pertaining to certification and recertification (including, but not limited to, examination content, eligibility requirements, grievance and disciplinary policies, setting fees, program operation, etc.) without being subject to approval by any other body.
- The examination is developed from job analysis data gathered from a national study
- Pass/fail rates and reliability statistics are a matter of public record.
- Examination development involves qualified professionals, such as content experts and psychometricians with expertise in exam development.

CSCS Examination Format

To earn the CSCS credential, candidates must either pass a rigorous written examination or computer based exam that consists of two sections. Candidates are allowed a maximum time of four hours to complete this examination process. A candidate must pass both sections to be CSCS-certified (and may retake any section not passed). The first section, referred to as "Scientific Foundations", consists of 90 multiple-choice questions in the areas of:

- Exercise Sciences (Anatomy, Exercise Physiology, Biomechanics)
- Nutrition

The second section, "Practical/Applied", consists of 120 multiple-choice questions, 40 of which involve viewing a videotape and answering questions associated with the exercises, muscles and/or joints shown. The areas covered include:

- Basic & Advanced Program Design
- Exercise Technique
- Organization & Administration
- Testing & Evaluation

Continuing Education Program

The purpose of having continuing education as part of a certification program is to encourage certificants to stay abreast of evolving knowledge and skills in the profession, and, in doing so, to promote the ongoing competency of those who are certified. In order to remain certified, the NSCA requires each certificant to do the following to remain certified:

- Complete six (6.0) CEUs or a prorated amount of CEUs if certified within the three-year reporting period.
- Submit a completed CEU Reporting Form and recertification fee.
- Maintain documentation of activities listed on the CEU Reporting Form.

NSCA CODE OF ETHICS FOR CERTIFICANT:
With the credibility possessed by the CSCS and NSCA-CPT examinations comes the responsibility to ensure the integrity of the credentials awarded. The Code of Ethics of the NSCA was established to make its certificants, CSCS and NSCA-CPT, aware of the standards of ethical behavior that should be followed in the practice of their profession (strength training and conditioning and personal training). The Code presents fundamental standards of behavior that all certificants should strive to achieve. It serves to increase ethical sensitivity and judgment, strengthen support for certificants' moral courage and sharpen their sense of identity as an integral part of the NSCA and its continued success.

The NSCA is committed to certifying individuals who demonstrate the knowledge and skills necessary to design and implement safe and effective strength training and conditioning and personal training practices. The NSCA also believes that continuing education encourages individuals to stay abreast of evolving knowledge and skills, and, in doing so, promotes their ongoing competency. This philosophy implies that the responsibility of its certificants is not limited to the well being of the athletes and/or clients, but also to society in general and the reputation of others in their field; with the overall goal being an improvement of health and well being for all.

The NSCA is dedicated to maintaining a high standard for certificants. The following Code of Ethics assures that CSCS and NSCA-CPT certificants are aware of the standards of ethical behavior that should be followed in the practice of their profession. Certificants shall:

1. Respect the rights, welfare, and dignity of all individuals.
2. Strive to provide equal and fair treatment to all individuals and not discriminate against anyone.
3. Provide and maintain a safe and effective training environment.
4. Comply with all general laws of the land including, but not limited to, applicable business, employment and copyright laws.
5. Accept responsibility for the use of sound judgment when working with their clientele.
6. Respect the confidentiality of their clientele while remaining accountable.
7. Refer their clientele to more qualified fitness, medical, or health professionals when appropriate.
8. Remain current on practical and theoretical foundations through continuing education activities.
9. Avoid engaging in any behavior or form of conduct that would constitute a conflict of interest or actions that adversely reflect on the profession or the NATIONAL STRENGTH & CONDITIONING ASSOCIATION.
10. Strive to safeguard the public by reporting violations of this Code of Ethics.

APPENDIX C. Strength & Conditioning Performance Team Development

Katzenbach & Smith (43) define a team as "a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable." Teams are preferable to single-leader groups when there is a need for collective work products (i.e. multiple skills, judgments and experiences) by members working together in real time, shifting leadership roles, and mutual as well as individual accountability. In contrast, single-leader/hierarchical work groups are appropriate when the sum of independent workers' contributions is adequate, singular rather than shared leadership is effective, task(s) and corresponding solution(s) are familiar, workers' skills can be applied productively without interaction (other than sharing information), and speed and efficiency have priority over extra performance results (43,44).

Extraordinarily demanding challenges are the driving forces behind high-performance teams. Common features of such teams include: (43,44)

- Members are committed to a clear mission, common approach, collaboration, and mutual accountability and responsibility.
- Expectations and goals are high but achievable, and performance evaluation is based on results.
- Roles are interdependent; leadership is shared; abilities, experiences, expertise, knowledge, skills and talents are complementary; contribution, participation and influence are balanced.
- Effective task performance is facilitated by encouraging and rewarding creativity, innovation and risk taking in all decision making or problem solving activities.

When aligning a Strength & Conditioning staff, the performance team concept can be applied by hiring practitioners with expertise and formal education in one or more of the topics comprising the "Scientific Foundations" domain (58) (Appendix A) or a related subject. Once the team is assembled, corresponding activities and responsibilities comprising the "Practical/Applied" domain (58) (Appendix A), as well as liaison assignments, can be delegated. In addition to exploiting greater collective expertise, this approach provides each practitioner with an opportunity to augment knowledge and skill acquisition in areas outside of his/her specialty. The Strength & Conditioning coordinator is still ultimately responsible for overseeing all aspects of the program, and for determining appropriate utilization of associates/assistants in the provision of safe, effective and efficient service. Specific duties and responsibilities can be assigned according to specialty areas or subdisciplines, in much the same way a sport coaching staff typically has offensive/defensive coordinators, liaison assignments, etc. Following (Table C1) is an example of how to align a Strength & Conditioning performance team:

*One area to carefully consider is that of a Rehabilitation & Reconditioning specialist, i.e. a member of the performance team who works specifically with injured/modified athletes to reduce risk of re-injury and facilitate return to full activity Potach & Grindstaff) [Chapter 20, pp 523-540] in Essentials Of Strength Training & Conditioning 7). Due to such athletes' increased need for care, it is impractical, especially during peak usage times, for Strength & Conditioning professionals to work with injured or modified participants while simultaneously instructing/supervising larger groups. In some situations, the Strength & Conditioning and Sports Medicine facilities are adjacent (or shared), with natural crossover in respective activities and responsibilities. In many others, however, they are separated; and there is an opportunity to improve interaction and communication, and resulting provision of care for injured/modified athletes. In either case, the Rehabilitation & Reconditioning specialist would be an appropriate choice for liaison between the Strength & Conditioning and Sports Medicine staff.

Table C1

Scientific Foundations Education/ Expertise	Practical & Applied Activities/ Responsibilities	Liaison Assignment(s)
Exercise/Sport Anatomy; Biomechanics	Exercise Technique; Testing & Evaluation; Rehabilitation & Reconditioning*	Exercise & Sport Science Faculty; Team Coaches; Sports Medicine Team
Exercise/Sport Physiology	Program Design; Testing & Evaluation	Exercise & Sport Science Faculty; Team Coaches
Exercise/Sport Nutrition	Nutritionist	Exercise & Sport Science Faculty
Exercise/Sport Pedagogy	Program Design; Exercise Technique; Organization & Administration	Exercise & Sport Science Faculty; Athletic Administration
Exercise/Sport Psychology; Motor Learning	Exercise Technique; Rehabilitation & Reconditioning*	Exercise & Sport Science Faculty; Sports Medicine Team
Training Methodology	Program Design; Organization & Administration	Exercise & Sport Science Faculty; Athletic Administration
Kinesiology; Physiotherapy; Sports Medicine	Rehabilitation & Reconditioning*	Sports Medicine Team

APPENDIX D.
Strength & Conditioning Facility Scheduling

Table D1. Calculations for space needs. Source: Greenwood (Chapter 21 [pp. 543 – 568], Essentials Of Strength Training & Conditioning (7))

Area	Examples	Formula
Prone/supine exercises	Bench press; Lying triceps extension	Actual weight bench length (6 – 8 ft.) + safety space cushion of 3 ft. multiplied by suggested user space for weight bench width of 7 ft. + safety cushion of 3 ft. *Example:* If using a 6 ft. long weight bench for the bench press exercise (6 ft. + 3 ft.) x (7 ft. + 3 ft.) = 90 $ft.^2$
Standing exercises	Bicep curl; Upright row	Actual bar length (4-7 ft.) + double-wide safety space cushion of 6 ft. multiplied by suggested user space for standing exercise width of 4 ft. *Example:* If using a 4 ft. curl bar for the bicep curl exercise (4 ft. + 6 ft.) x (4 ft.) = 40 $ft.^2$
Standing exercises from rack	Back squat; Shoulder press	Actual bar length (5-7 ft.) + double-wide safety space cushion of 6 ft. multiplied by suggested user space for standing exercise from a rack width of 8 – 10 ft. *Example:* If using a 7 ft. Olympic bar for the back squat exercise (7 ft. + 6 ft.) x (10 ft.) = 130 $ft.^2$
Olympic lifting area	Power clean	Lifting platform length (typically 8 ft.) + perimeter walkway safety space cushion of 4 ft. multiplied by lifting platform width (typically 8 ft.) + perimeter walkway safety space cushion of 4 ft. *Example:* (8 ft. + 4 ft.) x (8 ft. + 4 ft.) = 144 $ft.^2$

APPENDIX E. Strength & Conditioning Training Plan Development

A detailed discussion of developing a Strength & Conditioning training plan is beyond the scope of this project. For more specific information on program design, the Strength & Conditioning practitioner should refer to Section 4 (Chapters 15 – 20) of Essentials of Strength Training & Conditioning (7) as well as the NSCA position linked below. Additional information on fundamental training principles and their practical implications is also available through other resources (1,7,10,15,21,22,24-27,31,32,39,40,42,45-47,55,59,62,69-72,74-76,78-82,84-89).

NSCA Position Statement Summaries

[http://www.nsca-lift.org/Publications/posstatements.shtml]

Basic Guidelines for the Resistance Training of Athletes (61)

Strength Training For Female Athletes (40)

The Squat Exercise in Athletic Conditioning (15)

Anabolic-Androgenic Steroid (AAS) Use By Athletes (87)

Explosive Exercises & Training (76)

Explosive/Plyometric Exercises (86)

Youth Resistance Training (22)

APPENDIX F.
NCAA Division I Athlete-to-Coach Ratios

Table F1: NCAA Division I overall championship sports participation (2006 – 07) and resulting athlete-to-coach ratios, as the only division with limitations on number of coaches (NCAA Division I Manual, Bylaw 11.7).

Sport	Teams	Athletes	Average squad size	Limit on no. of coaches	Athletes per coach
TOTAL [men + women]	6,137	158,161		105	
Average [39 sports]			25.8	2.7	9.6

Table F2: NCAA Division I Men's championship sports participation (2006 – 07) and resulting athlete-to-coach ratios, by sport.

Sport	Teams	Athletes	Average squad size	Limit on no. of coaches	Athletes per coach
Baseball	284	10,039	35.3	3	11.8
Basketball	326	5,051	15.5	4	3.9
Cross Country	296	4,390	14.8	2	7.4
Fencing	21	365	17.4	2	8.7
Football	234	25,064	107.1	11	9.7
Golf	285	2,974	10.4	2	5.2
Gymnastics	17	298	17.5	3	5.8
Ice Hockey	58	1,650	28.4	3	9.5
Lacrosse	56	2,491	44.5	3	14.8
Rifle	20	120	6.0	2	3.0
Skiing	13	203	15.6	2	7.8
Soccer	195	5,350	27.4	3	9.1
Swimming/Diving	139	3,652	26.3	3	8.8
Tennis	257	2,584	10.1	2	5.1
Track (indoor)	240	8,961	37.3	3	12.4
Track (outdoor)	261	9,959	38.2	3	12.7
Volleyball	21	404	19.2	3	6.4
Water Polo	21	518	24.7	2	12.4
Wrestling	88	2,615	29.7	3	9.9
TOTAL	**2,832**	**86,688**		**59**	
Average [19 sports]			**30.6**	**3.1**	**9.9**

Table F3: NCAA Division I Women's championship sports participation (2006 – 07) and resulting athlete-to-coach ratios, by sport.

Sport	Teams	Athletes	Average squad size	Limit on no. of coaches	Athletes per coach
Basketball	325	4,744	14.6	4	3.6
Bowling	28	249	8.9	2	4.4
Cross Country	321	5,203	16.2	2	8.1
Fencing	26	403	15.5	2	7.8
Field Hockey	78	1,732	22.2	3	7.4
Golf	228	1,994	8.7	2	4.4
Gymnastics	65	1,109	17.1	3	5.7
Ice Hockey	33	828	25.1	3	8.4
Lacrosse	79	2,145	27.2	3	9.1
Rifle	27	171	6.3	2	3.2
Rowing	86	5,441	63.3	3	21.1
Skiing	14	215	15.4	2	7.7
Soccer	300	7,703	25.7	3	8.6
Softball	268	5,193	19.4	3	6.5
Swimming/ Diving	189	5,014	26.5	3	8.8
Tennis	304	2,838	9.3	2	4.6
Track (indoor)	289	10,591	36.6	3	12.2
Track (outdoor)	301	10,789	35.8	3	11.9
Volleyball	313	4,476	14.3	3	4.8
Water Polo	31	635	20.5	2	10.2
TOTAL	**3,305**	**71,473**		**53**	
Average [20 sports]			**21.6**	**2.6**	**8.3**

APPENDIX G. Emergency Care & Planning

Source: Guideline 1f [pp. 16-17], NCAA Sports Medicine Handbook (63)

Emergency Care

Reasonable attention to all possible preventive measures will not eliminate sports injuries. Each scheduled practice or contest of an institution-sponsored intercollegiate athletics event, as well as out-of-season practices and skills sessions, should include an emergency plan. Like student-athlete welfare in general, a plan is a shared responsibility of the athletics department; administrators, coaches and medical personnel who should all play a role in the establishment of the plan, procurement of resources and understanding by all parties. Components of such a plan should include:

1. The presence of a person qualified and delegated to render emergency care to a stricken participant;

2. The presence or planned access to a physician for prompt medical evaluation of the situation, when warranted;

3. Planned access to a medical facility, including a plan for communication and transportation between the athletics site and the medical facility for prompt medical services, when warranted. Access to a working telephone or other telecommunications device, whether fixed or mobile, should be assured;

4. All necessary emergency equipment should be at the site or quickly accessible. Equipment should be in good operating condition, and personnel must be trained in advance to use it properly. Additionally, emergency information about the student-athlete should be available both at home and on the road for use by medical personnel;

5. A general understanding by all parties, including the leadership of visiting teams, of the personnel and procedures associated with the emergency care plan; and

6. Certification in cardiopulmonary resuscitation techniques (CPR), first aid, and prevention of disease transmission (as outlined by OSHA guidelines) should be required for all athletics personnel associated with practices, competitions, skill instruction, and Strength & Conditioning. New staff engaged in these activities should comply with these rules within six months of employment.

Emergency Plan Example Template

Acknowledgment

The following emergency plan template was developed by Ron Courson (Director of Sports Medicine, University of Georgia; Chair, NATA College/University Athletic Trainers' Committee) and the University of Georgia Sports Medicine staff. This document provides a starting point for institutional development of individualized emergency plans for all athletics activities (Source: Guideline 1a [pp. 6 – 7], NCAA Sports Medicine Handbook (63)).

Emergency situations may arise at anytime during athletic events. Expedient action must be taken in order to provide the best possible care to the athletes of emergency and/or life threatening conditions. The development and implementation of an emergency plan will help ensure that the best care will be provided. Athletic organizations have a duty to develop an emergency plan that may be implemented immediately when necessary and to provide appropriate standards of health care to all sports participants. As athletic injuries may occur at any time and during any activity, the Sports Medicine team must be prepared. This preparation involves formulation of an emergency plan, proper coverage of events, maintenance of appropriate emergency equipment and supplies, utilization of appropriate emergency medical personnel, and continuing education in the area of emergency medicine. Hopefully, through careful pre-participation physical screenings, adequate medical coverage, safe practice and training techniques and other safety avenues, some potential emergencies may be averted. However, accidents and injuries are inherent with sports participation, and proper preparation on the part of the Sports Medicine team will enable each emergency situation to be managed appropriately.

Components of the Emergency Plan.

There are three basic components of this plan: emergency personnel, communication, and equipment.

1. Emergency Personnel. With athletic association practice and competition, the first responder to an emergency situation is typically a member of the Sports Medicine staff, most commonly a certified athletic trainer. A team physician may not always be present at every organized practice or competition. The type and degree of Sports Medicine coverage for an athletic event may vary widely, based on such factors as the sport or activity, the setting, and the type of training or competition. The first responder in some instances may be a coach or other institutional personnel. Certification in cardiopulmonary resuscitation (CPR), first aid, prevention of disease transmission, and emergency plan review is required for all athletics personnel associated with practices, competitions, skills instruction, and Strength & Conditioning.

2. Emergency Communication. Communication is the key to quick delivery of emergency care in athletic trauma situations. Athletic trainers and emergency medical personnel must work together to provide the best possible care to injured athletes. Communication prior to the event is a good way to establish boundaries and to build rapport between both groups of professionals. If emergency medical transportation is not available on site during a particular sporting event then direct communication with the emergency medical system at the time of injury or illness is necessary. Access to a working telephone or other telecommunications device, whether fixed or mobile, should be assured. The communications system should be checked prior to each practice or

competition to ensure proper working order. A back-up communication plan should be in effect should there be failure of the primary communication system. The most common method of communication is a public telephone. However, a cellular phone is preferred if available. At any athletic venue, whether home or away, it is important to know the location of a workable telephone. Pre-arranged access to the phone should be established if it is not easily accessible.

3. Emergency Equipment. All necessary emergency equipment should be at the site and quickly accessible. Personnel should be familiar with the function and operation of each type of emergency equipment. Equipment should be in good operating condition, and personnel must be trained in advance to use it properly. Emergency equipment should be checked on a regular basis and rehearsed by emergency personnel. The emergency equipment available should be appropriate for the level of training for the emergency medical providers. It is important to know the proper way to care for and store the equipment as well. Equipment should be stored in a clean and environmentally controlled area. It should be readily available when emergency situations arise.

Roles Within the Emergency Team.
The development of an emergency plan cannot be complete without the formation of an emergency team. The emergency team may consist of a number of health care providers including physicians, emergency medical technicians, certified athletic trainers; student athletic trainers; coaches; managers; and, possibly, bystanders. Roles of these individuals within the emergency team may vary depending on various factors such as the number of members of the team, the athletic venue itself, or the preference of the head athletic trainer. There are four basic roles within the emergency team.

1. Immediate Care of the Athlete. The first and most important role is immediate care of the athlete. The most qualified individual on the scene should provide acute care in an emergency situation. Individuals with lower credentials should yield to those with more appropriate training.

2. Emergency Equipment Retrieval. The second role, equipment retrieval, may be done by anyone on the emergency team who is familiar with the types and location of the specific equipment needed. Student athletic trainers, managers, and coaches are good choices for this role.

3. Activation of the Emergency Medical System. The third role, EMS activation, may be necessary in situations where emergency transportation is not already present at the sporting event. This should be done as soon as the situation is deemed an emergency or a life-threatening event. Time is the most critical factor under emergency conditions. Activating the EMS system may be done by anyone on the team. However, the person chosen for this duty should be someone who is calm under pressure and who communicates well over the telephone. This person should also be familiar with the location and address of the sporting event.

   Making the call:

   - 911 (if available)
   - telephone numbers for local police, fire department, and ambulance service

   Providing information:

   - name, address, telephone number of caller
   - number of athletes
   - condition of athlete(s)
   - first aid treatment initiated by first responder
   - specific directions as needed to locate the emergency scene ("come to south entrance of coliseum")
   - other information as requested by dispatcher

4. Direction of EMS to Scene. After EMS has been activated, the fourth role in the emergency team should be performed, that of directing EMS to the scene. One member of the team should be responsible for meeting emergency medical personnel as they arrive at the site of the contest. Depending on ease of access, this person should have keys to any locked gates or doors that may slow the arrival of medical personnel. A student athletic trainer, manager, or coach may be appropriate for this role.

When forming the emergency team, it is important to adapt the team to each situation or sport. It may also be advantageous to have more than one individual assigned to each role. This allows the emergency team to function even though certain members may not always be present.

Transportation.
Emphasis is placed at having an ambulance on site at high risk sporting events. EMS response time is additionally factored in when determining on site ambulance coverage. Ambulances may be coordinated on site for other special events/sports, such as major tournaments or Conference/NCAA regional or championship events. Consideration is given to the capabilities of transportation service available (i.e. Basic Life Support or Advanced Life Support) and the equipment and level of trained personnel on board the ambulance. In the event that an ambulance is on site, there should be a designated location with rapid access to the site and a cleared route for entering/exiting the venue.

In the emergency evaluation, the primary survey assists the emergency care provider in identifying emergencies requiring critical intervention and in determining transport decisions. In an emergency situation, the athlete should be transported by ambulance, where the necessary staff and equipment is available to deliver appropriate care. Emergency care providers should refrain from transporting unstable athletes in inappropriate vehicles. Care must be taken to ensure that the activity areas are

supervised should the emergency care provider leave the site in transporting the athlete.

Conclusion.

The importance of being properly prepared when athletic emergencies arise cannot be stressed enough. An athlete's survival may hinge on how well trained and prepared athletic health care providers are. It is prudent to invest athletic department "ownership" in the emergency plan by involving the athletic administration and sport coaches as well as Sports Medicine personnel. The emergency plan should be reviewed at least once a year with all athletic personnel, along with CPR and first aid refresher training. Through development and implementation of the emergency plan, the athlete will have the best care provided when an emergency situation does arise.

APPENDIX H.
Protective Legal Documents

Notes: This appendix provides general legal information. Protective legal documents should not be adopted or used in any context without individualized legal advice. The information in this appendix has been adapted with permission from an article by JoAnn Eickhoff-Schemek, entitled "Distinguishing Protective Legal Documents", published in the ACSM's Journal of Health & Fitness.18

Types of Protective Legal Documents

Institutions such as universities/colleges and high schools often require athletes to read and sign some type of protective legal document(s) prior to participation in athletically-related activities, including Strength & Conditioning. These documents can help protect the institution and its employees from potentially costly legal claims and lawsuits. The law involving protective legal documents is quite complex, however, and understanding their function and the specific legal protection they provide is often confusing.

Several types of protective legal documents exist. Three that are commonly used in the health/fitness field may be applicable in Strength & Conditioning settings: informed consent, agreement to participate, and waiver. Each provides protection from liability arising from certain types of claims that can occur while participating in activities, as explained below.

Causes of Injury Associated With Physical Activity

Cotten & Cotton (17) describe three causes of injury are associated with physical activity: inherent risks, negligence, and extreme forms of conduct.

Inherent Risks

As the term implies, these risks are inherent in the activity. Generally, injuries caused by inherent risks are accidental in nature, not preventable, and no one's fault. The informed consent and agreement to participate documents provide the best possible protection for claims arising from such injuries. Although actual sections and content of protective documents vary (and depend upon state law), the following are generally included in informed consent and agreement to participate documents:

Informed Consent

- Purpose of the activity
- Risks of the activity*
- Benefits of the activity
- Confidentiality
- Inquiries
- Signatures

Agreement to Participate

- Nature of the activity
- Possible consequences of injury*
- Behavioral expectations of the participant
- Condition of the participant
- Concluding statement
- Signatures

*Note: "assumption of risk" language

A section within each of these documents is devoted to informing the participant of the potential risks, including those inherent in the activity. It is important that this section carefully describes these risks (e.g., types of accidents that might occur and the consequences of these accidents), and that the language used is understandable to the person who will be signing it. This provides an "assumption of risk" defense, i.e. the participant knew and fully understood the risks, appreciated the risks, and voluntarily assumed them. In general, the law does not allow individuals to recover compensation for injuries resulting from assumed risks.

Negligence.

Injuries can be caused by negligence, i.e. failure to act as reasonable and prudent professional would act under the circumstances. Participants can be injured by negligent acts of the Strength & Conditioning staff (e.g., failure to inspect/maintain exercise equipment, failure to provide CPR or First Aid when needed). A waiver document, also called a prospective release, provides the best legal protection for claims arising from injuries caused by negligence. Once again, while the actual sections and content of such documents vary depending on state law, waiver documents generally include: exculpatory clause; description of risks ("assumption of risk" language); indemnification language (may not be valid); severability clause; affirmation of legal capacity; and signatures.

The "exculpatory clause" is a key section within the waiver explicitly stating that the participant releases the Strength & Conditioning facility for any liability associated with negligence by the facility or its employees. This clause, which must be written very carefully to be enforceable, provides evidence that the participant gave up (waived) his/her right to file a negligence claims against the facility. However, the exculpatory clause does not provide protection from lawsuits arising from injuries due to inherent risks; and an "assumption of risk" section is often added to the waiver for this purpose.

Extreme Forms of Conduct.

Injuries can also be caused by extreme forms of conduct (often referred to as gross negligence, willful and wanton conduct, or reckless conduct). For example, if the Strength & Conditioning staff had prior knowledge of an existing danger or risk but took no corrective action to help prevent resulting injuries, this failure

to act could constitute an extreme form of conduct. Generally, no documents can provide legal protection for grossly negligent or reckless conduct. A few states may allow the use of a waiver to protect from such conduct, but most do not. (17)

Making Protective Legal Documents Enforceable

Protective legal documents, signed by participants prior to their participation in Strength & Conditioning programs and services, can provide a good defense for the Strength & Conditioning facility after an injured participant files a claim or lawsuit. A variety of factors should be considered in order for these forms to be legally enforceable: (17,18,34)

- A lawyer who is knowledgeable about the law regarding protective documents should review your protective legal documents to help ensure they are written properly and reflect the law in your state.

- Informed consent and waiver documents are contracts, and can only be signed by adults because minors cannot enter into a contract. 'Agreement to participate' documents are not contracts, and therefore can be signed by adults as well as minors.

- The exculpatory clause used in a waiver is not allowed in an informed consent or agreement to participate. If an exculpatory clause is added to an agreement to participate for adults, it then becomes a waiver.

- The exculpatory clause used in a waiver is not enforceable in medical or research settings, or in certain states (Virginia, Montana, Louisiana) where they are against public policy. In educational settings such as a college/university, the general rule is that waivers are against public policy for required activities but may be enforceable for voluntary activities.

- Informed consent documents used in medical settings must be administered prior to a patient having any kind of medical procedure. If the informed consent is not written or administered properly, the health care provider (and medical facility) could be found negligent for not informing the patient of particular risks. This also applies in research settings, because subjects must be properly informed of risks through informed consent (note that this point is applicable in Strength & Conditioning settings where athletes participate as human subjects in research studies).

- All documents must be administered properly. For example, participants should have ample time to read them, and a knowledgeable employee should verbally explain the document to each participant.

- Protective documents must be stored in a secure place for the amount of time consistent with the statue of limitations, which may be up to 4 years in some states.

The choice of document or combination of documents to use is a very important decision. In situations where Strength & Conditioning activities are not covered in the employing institution's legal documentation, Strength & Conditioning professionals should consult with a qualified lawyer to assist with these decisions and to review or write the documents prior to implementation. These resources should be shared with your lawyer when he/she reviews the drafts and makes the final document revisions.

Written protective documents provide important evidence when a lawsuit occurs. For example, if a Strength & Conditioning facility is sued for negligence, but has evidence that the injured party signed a properly written and administered waiver, this document provides the evidence to have a claim dismissed. In this situation, the legal document protects the facility from a potentially costly negligence lawsuit.

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The NSCA would like to acknowledge all the individuals responsible for the update of this document.

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